**Nile Basin Development Challenge**

**Template for the most significant change story 2012**

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| Project | NBDC 3 |
| Title | Development trajectories and hotspots of degradation |
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| Domain |  |
| Story | Ethiopia has adopted three successive poverty reduction programs over the past 12 years with a focus on the intensification and commercialization of agriculture. Each of these policies have had an effect on the land use and temporal dynamics of land cover and land use change within the Blue Nile Basin (BNB). There are numerous studies looking at changes in land cover, land use and degradation within individual watersheds of the Blue Nile Basin. However, to our knowledge, none exist that take a step back and look at the trends at the basin scale, or which combine biophysical and socio-economic factors to explain the trajectories of change and development which have occurred across the basin over the past 10-15 years. Patterns of land use and land cover are determined by biophysical and social variables interacting in space and time; as land use transitions are often characterized by different development pathways in different locations, an analysis of the spatial determinants of the various trajectories is essential for effective land use planning and the development of appropriate land related policies.  Under the N3 project, research is being undertaken to characterize the development trajectories within the BNB. We are analyzing land use/cover changes (as well as dynamic processes such as biomass production, erosion and fire) and the factors driving land change processes over the past 10 years, which will allow us to identify hotspots and directions of change. These will subsequently be used as an input to the extrapolation domains for rainwater management interventions under the assertion that effective targeting of interventions at the at basin scale, an understanding of past changes and hotspots of change is essential.  An interesting development in the work has emerged in relation to the occurrence of fire and burning due to agriculture within the Blue Nile. This was raised as an issue again and again by farmers and national partners in Ethiopia. While farmers and government agencies advocate burning as a way of increasing soil fertility, in the long term the effect is likely to be a decrease in soil fertility, due to modification of run-off and infiltration processes. Under N3 an analysis of fire was conducted for the basin – daily fire extent was mapped between 2000 and 2011, and a very clear pattern emerged, with large areas burning at the same time every year. The results are being used by N4 in the SWAT modeling, as fire will modify run-off and infiltration processes. Colleagues from the Volta Basin have seen the results, and following discussions we have produced the same fire data for the Volta. These are being using within V4 to analyze the impact of frequent burning and flood severity, and to provide an understanding of the extent to which burning is practiced. |
| Lessons | **List the lessons here**  1.Information on past changes in land use and land cover are essential to properly understand the current conditions in the basin  2. For effective targeting of interventions at the at basin scale, an understanding of past changes and hotspots of change is essential  3. Fire is an important issue in the basin, contributing to both soil fertility and hydrology (through run-off and infiltration processes)  4. Fire is also an important cross cutting basin issue |
| **Describe the issues that have facilitated the success aspects of this story?**  Identifying cross basin issues (fire) and developing cross basin research between BDCs (Nile and Volta), collaborating with other CG centres working in the Nile and on other N projects (ICRAF and IFPRI). |
| **What has exacerbated the aspects of this story that have not gone well?** |
| Process | **Why and how was this story selected?**  Fire and burning within the basin was not initially planned as a component of the work on development trajectories, but was raised time and time again in discussions with stakeholders and has emerged as an important issue through the N2 innovation platforms. N3 therefore decided to adjust the work on development trajectories to incorporate a detailed analysis of the fire regimes of the basin. The research on fire has just been completed for the Nile and Volta and the results are extremely enlightening. These are receiving increasing interest and attention and agricultural burning is emerging as an important issue not only with the respective BDCs but within other basin research projects. |